Title
An Unknown Epidemic Arrives in America

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ABSTRACT

Since the late 90s, researchers have been tracking a kidney disease of uncertain origin that has killed more than 20,000 people – mostly men under the age of 45 – across the Pacific Coast of Latin America. No one suspected to see it in the United States. Then, patients arrived in the emergency room of a Houston hospital by the hundreds.

This narrative non-fiction piece, paired with web design, animation and interactive elements tells the story of Jesus Gonzales—one MeN patient living in the United States.

An Unknown Epidemic Arrives in America

Some Sundays, when Jesus Gonzales feels bleak and spent, when he has marked the Houston night with shallow breaths, when the weight of the week ahead—like every other—rests heavy on his mind, he thinks—just for a moment—that he would like to remain in bed. That today he would like to surrender to the pain in his bones, to his calcified hip, to his left hand that cannot curl beyond a fragile fist and stay at home.

"Sometimes you can't even get up," Gonzales says. "But I say, 'No, this is good for my life.'"

Among his brothers, his cousins, his octogenarian *abuela*, he is admired for just this: for being the person who does not complain, the person who does not wallow, the person who is not bitter about the fate he has been handed. So, Gonzales lifts his aching body from bed — like an airplane at take-off, he says — buttons a dress shirt over his slender frame and, as he does every Sunday, drives a half-hour to the Bethel Community Church on the fringes of Houston. There, in a dim, gray room, when the night has been long and the morning has been slow, Gonzales takes a seat a few rows from the front, places his brown, leather bible on the chair beside him, and drops to his knees and cries.

He cries for a diagnosis that came too soon, for the swollen veins that protrude from his left arm, for the dark scar that now arches across his lower back. He cries for the family he chose to forgo, the children he did not watch grow, the wife who does not fall asleep beside him. He cries for the past two, taxing decades. For all that has been and all that has not. He cries because—even though he is known to be happy—this burden, he says, is heavy.

In 1990, when he was 18-years-old, Gonzales was diagnosed with kidney failure, a disease common among those nearly four times his age. He had no history of diabetes. No sign of high blood pressure. No illness such as lupus, which is known to cause renal problems. All he had were small, shriveled kidneys—like raisins, he says—that no longer filtered the toxins from his blood or removed the excess fluid from his body. In his native El Salvador, where Gonzales had migrated from three years earlier, he had never even seen a doctor. But there he was, in the emergency room of Dallas' Parkland Hospital, a young and healthy man, dying from a disease he should not have.

Across Latin America, this was a familiar story, one quietly repeated between mother, brother, father and friend, again and again. It began with a young and healthy man, a man who had never visited a doctor's clinic. And it usually ended with a diagnosis for which little could be done. As a medical resident at one of El Salvador's public hospitals in the late 90s, Ramon Trabanino saw only the second half of this story. He saw men with kidney failure waiting in the emergency room, filling the ward beds and even resting in the kitchen, he darkly jokes.

"They were dying in the emergency room," says Trabanino, now a nephrologist in the country's capital, San Salvador. "They urgently needed dialysis."

These men are among some 20,000 people across Latin America who have died from a kidney epidemic known as Mesoamerican nephropathy, shortened to MeN, during the past 15 or so years. The disease causes the kidneys to shrink and shrivel, halting their ability to function normally. Without treatment, such as regular dialysis—unavailable to most MeN patients—life expectancy is short. Trabanino saw the men only once or twice in hospital before they chose to die at home. As research would eventually confirm, the disease in Latin America is confined to the Pacific coast, with hotspots stretching from Guatemala to Costa Rica. But it may also have a global reach. Since the late 90s, a similar disease, more generally known as chronic kidney disease of unknown origin, has appeared in Egypt, Sri Lanka and southern India. After some sixteen years of research, however, the cause, the cure and whether the two diseases are even related, remains unknown. Meanwhile, migration borne of violence, poverty and instability across the Americas has led to the disease appearing in a place far from the source--the United States.

Since the early 90s, doctors in Houston have treated hundreds of men most likely suffering from MeN. They are undocumented migrants who labor on construction sites or sweat in the busy kitchens of restaurant chains across the country's fourth largest city. Most have no health problems until the chronic headaches and waves of nausea begin. Then, once admitted to the emergency room, doctors discover that they have those same small, shrunken kidneys.

"You check them out and there is no kidney function left—literally," says Garabed Eknoyan, a nephrologist at Ben Taub Hospital, in Houston.

Even if the phenomenon seemed unusual, though, few acted on what they were seeing in the hospital, Eknoyan says. The lack of documentation in the U.S. and no real diagnosis method—MeN kidneys are usually too small and too fibrotic for doctors to biopsy without the risk of internal bleeding—means there are few concrete numbers to help understand or support how widespread the disease is. Given Houston's large Latin American population, of which Salvadorans make up an estimated eight percent of all foreign-born people, the city is not an unexpected hotspot. Hospitals in Dallas, San Antonio and Austin have also seen cases of the disease but in smaller numbers. MeN patients are showing up in less likely states, too. In Maryland, at least a dozen men — whose kidney failure fits the description of the disease—have sought treatment at Johns Hopkins Medicine, says Kathryn Kline, an internal doctor at the hospital.

"Even in cities with small Latino immigrant populations, you are seeing some cases," she says.

Data in Latin America is incomplete, too. That's why Trabanino describes MeN as a "silenced massacre," one whose impact has been masked by political turmoil, crippling poverty, and, for a long time, a lack of interest. As deaths within towns and communities continued over the years, medical researchers and physicians have proposed a number of causes, including everything from heat stress to infectious disease, but so far the condition has eluded understanding. Meanwhile, doctors in Latin America—and now the U.S.—have been grappling with a more basic problem: how best to take care of a neglected but ever-growing population with an incurable illness.

"We try to help as much as we can," Trabanino says. "But sometimes we feel like we are trying to combat a wildfire with a glass of water."

In Uluazapa, El Salvador — a town northeast of the city of San Miguel—Jesus Gonzales passed his youth in the verdant fields that surrounded his family's home. Gonzales' father was the pastor of a strict Evangelical church, one where soccer was forbidden, women could not wear pants and no one could attend the funeral of a non-believer. School was also seen as a frivolity, and at seven years old, Gonzales was plucked from his desk and sent to join his two brothers filling boxes with white, fluffy cotton. It is a job Gonzales describes as, "*malo*," a job for the poor and the desperate, a job that left him covered in the same pesticides that were doused over the crops.

“We didn’t have protection, we didn’t use masks—nothing,” Gonzales says. “People did it because of their need.”

Throughout the 80s, in the El Salvador of Gonzales’ youth, a violent civil war emerged from decades of political unrest. Most men under the age of 50 were more likely to die from a bullet than from kidney failure, with an estimated 75,000 civilians killed by the end of the war. Among those who survived were those who fled—including Gonzales. At just sixteen years old, alone and living in Dallas, he began working in the kitchen of a restaurant chain, sending a portion of his minimum wage income back home each month. After two years of long days and late nights he began to feel ill. It started with a dripping, bloody nose. Then he felt as if he could not breathe, as if his body was filling with a liquid it could not expel. In 1990, in the emergency room of Dallas’ Parkland Memorial Hospital, Gonzales was told his kidneys were small and shrunken. They no longer worked as they should. Back home, Gonzales had heard of uncles and cousins, friends and fathers who had died from something he describes as “renal deficiency.” But as a young, healthy teenager who had moved to the U.S. just three years earlier, Gonzales did not—could not—imagine it for himself.

“I didn’t think this would happen to me,” he says. “After the first dialysis, I thought I would get better.”

The desiccated state of Gonzales’ kidneys, however, meant he would never recover. Rather, he would need dialysis, the only treatment available, for the rest of his life. It was at this point, as Gonzales imagined his future, that he decided he would remain alone, forever. He had always wanted a family, to be a husband and a father, to hold near those of blood and kin. But with the diagnosis came a life he had not expected—one defined by an unknown illness he could not prevent and an onerous treatment which—if he married—would be inherited by those he loved. It is a sentiment echoed across Latin America among young, despondent MeN patients: if you are going to die soon, what is the point of living?

“It’s hard,” Gonzales says. “What man doesn’t want to have a family of his own?”

In Gonzales’ home country, at the end of Salvadoran civil war in the early 90s, Ramon Trabanino began a medical residency at Rosales National Hospital, in San Salvador. He expected a range of diseases and diagnoses, but every day in the emergency department, he saw patient after patient with kidney failure. They were mostly young men from the Pacific Coast—men like Gonzales. Trabanino soon discovered that while the phenomenon was new to him, for his patients, it was not. Most recalled how a father or brother, cousin or friend, had already

come to the hospital, received the same diagnosis, and now they were dead. Trabanino had no answers.

“You only have kind words and the reassurance that you are going to do as much as you can to help them,” he says.

Around the same time, at Ben Taub Hospital, in Houston, Eknoyan began seeing similarly young, otherwise healthy men appearing at the emergency room. They had the same small, shriveled kidneys as Gonzales and the other men in El Salvador. Back then, this type of atrophied kidney was one of Eknoyan’s research interests. Eknoyan studied nephrology during its emergence as a discipline in the 1950s and at the time, two kinds of kidney disease — analgesic nephropathy and Balkan endemic nephropathy — dominated research. The first is caused by a pain-relief drug called phenacetin, which can concentrate in the kidneys with dehydration. The second is caused by a toxin consumed via a plant that grows among Balkan wheat fields. Both diseases lead to withered, useless kidneys. Both were also hiding in plain sight. Given that the name, Mesoamerican nephropathy, had not yet emerged, Eknoyan coined his own phrase, calling the disease “Mexican nephropathy.” But beyond treating the patients he saw in the emergency room each day, he asked no questions, undertook no research, collected no data on the kidney phenomenon he saw unfold at the hospital.

“I have in my life a few regrets over things I observed as a physician but never pursued,” Eknoyan says. “I never counted [those patients]. I was too busy doing other things.”

In El Salvador, where the situation was considerably worse, Trabanino and three colleagues decided to undertake a study to try to understand what was happening. For six months, they stood at the door of the emergency room, collecting basic data from each renal patient. Among their sample of 205 new cases, two-thirds had a kind of kidney failure that could not be explained by more common causes such as diabetes and high blood pressure. When the study was published in 2002 it became the first scientific paper to document this specific kidney disease that was appearing in El Salvador. The team won a national prize— “a slap on the back,” Trabanino says—but to his frustration, the paper did little to spur early interest in the disease. That didn’t stop people from the affected coastal communities—who are eight times more likely to get kidney damage than those living elsewhere—to read about the study and travel to San Salvador looking for Trabanino.

“They thought, ‘Finally, someone has noticed what’s happening in our homes and communities,’” he says. “They were disappointed, though, because I didn’t know the cause or cure.”

In the paper’s conclusion, however, the team speculated that pesticides might be the culprit. El Salvador had a long history of pesticide use. In the coastal Bajo Lempa region, also affected by MeN, more than 80 percent of men have reported close contact with some kind of agricultural chemical. One study found that in the same region, dieldrin—a pesticide used in cotton fields until it was banned in 1986—was present in shrimp ponds at a concentration 1.5 times higher than the U.S. EPA limit. It is a theory that resonates with Gonzales, too. While no one at the hospital or dialysis clinic in Houston has suggested a cause for his illness, he is sure that everything can be traced back to his days in the cotton fields. The pesticide theory has also gained traction in Sri Lanka, where rural communities have experienced a similar kind of renal failure. One researcher even suggested that the disease, known in the country as chronic kidney disease of unknown origin, be renamed “chronic agrochemical nephropathy” to better reflect its roots.

In the coastal regions of Nicaragua, where the sugar cane grows tall and sweet, thousands of men are employed at the height of each *zafra,* or cutting season, to hack at the burnt, dry cane stalks with sharp and curved machetes. By the numbers, these men are a group ravaged by MeN. But they are not the worst affected. Data collected by researchers at Baylor College of Medicine has shown that by proportion, certain groups—including sugar cane seeders and shrimp farmers—experience MeN at much higher rates.

“People still believe this is a disease of sugar cane workers,” Trabanino says. “But this is not an agricultural disease.”

In the early 2000s, as Trabanino studied to become a nephrologist, he began working with the community of Tierra Blanca, an impoverished coastal region whose population has been affected by MeN. With help from a local organization, Emergency Social Fund for Health, Trabanino began a registry of MeN patients in the town and collected urine samples to test the pesticide theory. But when the samples were analyzed Trabanino was surprised: the results showed no association between pesticides and Mesoamerican nephropathy. It was an early finding, supported again in 2012, by researchers at the International Mesoamerican Nephropathy Workshop when pesticides were cited as an unlikely cause of MeN. At the same conference,

though, researchers suggested another possible cause, one both common and contentious–heat stress and dehydration.

In the summer of 2015, Rebecca Fischer sat in the hospital of Nicaragua's oldest sugar cane refinery and thumbed through hundreds of medical records, each one handwritten in Spanish and tucked into a metal filing cabinet. Outside the hospital, the tall fields of sugar cane rustled in the breeze, each one cascading after the other from the edge of Chichigalpa to the ashy base of Volcano San Cristóbal. The Pacific coast region of Nicaragua is best known for its economy of rum and sugar, but in recent years it has gained a darker reputation. One-in-three men in Chichigalpa are affected by MeN and the disease is said to be responsible for nearly 50 percent of male mortality. Communities here have felt the impact so much that one village, bordered and bound by sweet, verdant cane fields, has come to be known as the "Island of Widows."

For the past four years, a team from Baylor--including Fischer, a post doctorate in tropical medicine—has been investigating the quiet, tragic consequences of Latin America's most mysterious epidemic. Based in the hospital at Ingenio San Antonio, the team has had access to more than two decades of medical records, each one tied to a sugar cane worker employed by the refinery and who, in turn, has received healthcare at the hospital. With a background in investigating epidemics, Fischer and her colleague Kristy Murray began to tease apart the natural history of the disease from its origin.

"We want to get as close to the event that causes it as possible," Fischer says. "So we really reached back to find out what happens."

As Fischer trawled through the records, she noticed a pattern: worker after worker arrived at the clinic with a slew of symptoms—fever, back pain, nausea, vomiting—and were soon diagnosed with a temporary form of kidney failure called acute kidney injury, or AKI. After an AKI episode, the men would rest and recover, regaining kidney function before returning to the fields. But as Fischer read through the files, she noticed how these episodes would occur again and again, until eventually the men stopped returning to work. After two or three AKI episodes over the course of six months, their kidneys would no longer rebound and the temporary failure became permanent.

"That's much faster than other kinds of chronic kidney disease," Fischer says. "This isn't a ten to 20-year process, this is very quick renal failure."

Acute kidney injury has been linked to heat stress and dehydration. Latin America's hot temperatures, paired with heavy exertion, lack of shade, infrequent breaks and lack of potable water, can place stress on the kidneys, causing episodes of AKI. It is then hypothesized that these injuries accumulate over time and can lead to irreversible damage, such as that seen with MeN patients. The theory is also supported by U.S.-based research. Last year, a team from Emory University published the results of a four-year study which found that among their sample of farmworkers, more than 30 percent experienced AKI on at least one work day, and with each five degree (°F) increase in the heat index, the AKI risk rose by more than 35 percent.

But Fischer and the Baylor team do not believe that the acute kidney injuries seen in MeN patients stem from heat stress and dehydration. Given Chichigalpa's close ties to the sugar cane industry, the disease in Nicaragua is often multigenerational: a wife becomes a widow, then loses a son. Yet if the disease is tied to poor working conditions, such as a lack of both potable water and rest breaks, why does it not reach back to previous generations when working conditions were worse? To better consider this, the team—led by Baylor nephrologist Sreedhar Mandayam—performed kidney biopsies on eleven Chichigalpa men recently diagnosed with MeN. The samples showed the scars of repeated AKI but also an inflammation in the kidneys that Fischer says cannot be caused by heat stress. There remains, however, a role for dehydration. A key finding of analgesic nephrology, one of the first researched kidney epidemics, was that dehydration allowed for the toxin—a drug called phenacetin—to concentrate in the kidneys. But ultimately, the damage came from the toxin, not the dehydration alone.

"It could be heavy metals, it could be an infectious agent, it could be chemical agent," Fischer says. "But we now know it's a toxin of some kind."

Originally, Fischer explains, the team suspected it was related to a strain of Hantavirus and spread through rodents. Tests soon showed no correlation. Instead, the Baylor team has moved onto pathogen discovery, comparing RNA and DNA samples from those affected with data on existing infections. As Fischer says—and previous epidemics have shown—the cause is likely to be something that already exists, something hiding in plain sight. While Fischer analyzes the results, the importance of finding the cause is not far from thought, especially when access to treatment is often difficult and sometimes impossible.

"It's hard for me to discuss without talking about the human side of it," she says. "The story there is really such a tearjerker."

Every Monday morning, before the sun has warmed the day, Gonzales heaves his body out of bed, loops a belt through his slacks and drives half an hour to the outskirts of downtown Houston. After a weekend spent walking, socializing, and praying, he is tired. He feels ill. Sometimes, he is simply miserable. But with every mile spent behind the wheel, as a Spanish radio station hums in the background, Gonzales begins to feel a little better. He is on route to dialysis—on route to relief.

For the past two years, Gonzales has been a patient at Houston's Riverside Dialysis Center. Three times a week, after his drive from the suburbs to the city, he sits in his usual blue padded chair and, for three hours, waits as his blood is circulated through the filter and returned to his veins. Sometimes, Gonzales will watch the news on a small television attached to the chair. Other times, he will chat with those seated around him, many of whom also fit the MeN criteria. A strict evangelical upbringing, however, has made Gonzales a tough yet tolerant critic. He has a distaste for swearing, for vulgarity, for the tall tales, so he says, that some men spin about their female conquests. But there are also those for whom he feels sorry: the patients whose teeth fall out, whose skin becomes sunken and ashy, the ones who cry out when a needle—one of six per week—is poorly inserted.

"Dialysis is like a cancer that consumes you each day," Gonzales says. "It's a way to live but it causes you to deteriorate."

While regular dialysis, such as that at Riverside, is the norm for U.S. citizens, it is a scarcity among the undocumented. Well before 6 a.m., the green and gray emergency department of Houston's Ben Taub Hospital is filled with patients too sick, too poor, or too invisible to seek dialysis treatment elsewhere. The patients—about 25 per day—are often young Latino men. Men in their twenties and thirties. Men with nausea and vomiting and pallid skin. Men whose faces Chandan Vangala will never forget.

"They're so young and it's so striking," says Vangala, a nephrologist at Baylor. "It's hard to get over."

For hours, sometimes, the men wait to see if their potassium levels are high enough, if their breathing is strained enough, and if today, they are sick enough to qualify for treatment. The routine of emergent dialysis, reserved for those without health insurance and sometimes called compassionate dialysis, is a process that most undocumented renal patients in Texas will experience about once a week—if they are lucky. At times, a patient's blood potassium level can be nearly double the norm, yet they will be asked to return another day. Other times, if the

nausea and vomiting and slurred speech can be attributed to their failing kidneys but their potassium level is not high enough, the patient will receive dialysis anyway. By the end of the day, ten of the original 25 men will be sent home without treatment.

"It just feels like you're doing a disservice,'" Vangala says. "There's nothing about it that feels particularly compassionate."

The odds, too, are stacked against the patient.

A 2017 study—which compared patients in California, Colorado and Texas—found that those who receive emergent dialysis are fourteen times more likely to die within five years than those who receive regular treatment. They are also more prone to other health complications: as an emergent dialysis patient in Dallas, Gonzales slipped into an eight-day coma caused by the build-up of toxins in his body. Because of the increased hospitalizations, emergent dialysis costs around four times more than regular dialysis. The extra cost then falls upon public, safety-net hospitals such as Ben Taub which are legally required to treat everyone at the emergency room—irrespective of their ability to pay, and regardless of their immigration status. To curb the costs, states such as California have introduced universal dialysis, which means that anyone, irrespective of their ability to pay or legal right to care, can receive regular dialysis.

Ten years ago, Harris County—where Houston is located—followed suit and opened the county's only public dialysis clinic. Riverside, where Gonzales is now a patient, has the capacity to treat 190 patients, or about half of Houston's undocumented renal population. But the clinic is at capacity and the young age and increased life expectancy of Riverside patients means that seats remain scarce. For patients who are young and otherwise healthy — such as Gonzales—there is another treatment option. But it is one fraught with emotion, complicated by regulation and most often unattainable.

"If you or I were to get kidney failure, we'd be asking around to get a transplant," says Rajeev Raghavan, a Baylor nephrologist who has researched access to dialysis and mortality rates. "Everything else is really substandard."

To be an undocumented person in the United States, however, is to be consigned a different market. While patients at Riverside have worked as day laborers and on construction sites—industries that have some of the highest fatalities in the country—a kidney transplant remains an impossible luxury. The worth of a person is not dependent on the hardship of their labor, yet there remains a cruel irony in that those who toil most receive the least. It is a paradox that

doctors such as Vangala and Mandayam have, too, been forced to reconcile. Especially as they treat young patients suffering from a disease as merciless and mysterious as MeN.

“It is heartbreaking for us to take care of these patients because we can do some things, but we really can't do everything that we would like to,” Mandayam says. “More importantly, we can’t do anything to stop it from happening—at least so far.”

On a Sunday morning in early March, Gonzales buttons a pastel pink shirt over his scar, picks up his brown, leather bible, and drives to the Bethel Community Church. He takes his usual seat by the long, thin windows, where the light seeps through in soft lines between the closed blinds. Three women with bare feet and long, white dresses begin dancing to a Spanish hymn, twirling red, sparkling scarves above their heads. As the crowd sings along, Gonzales picks up a silver, iridescent tambourine and taps the tinny instrument against his hand, high above his head.

“You come to church, the pastor is preaching, and it fills you up,” he says. “It can relieve your hunger—everything is beautiful.”

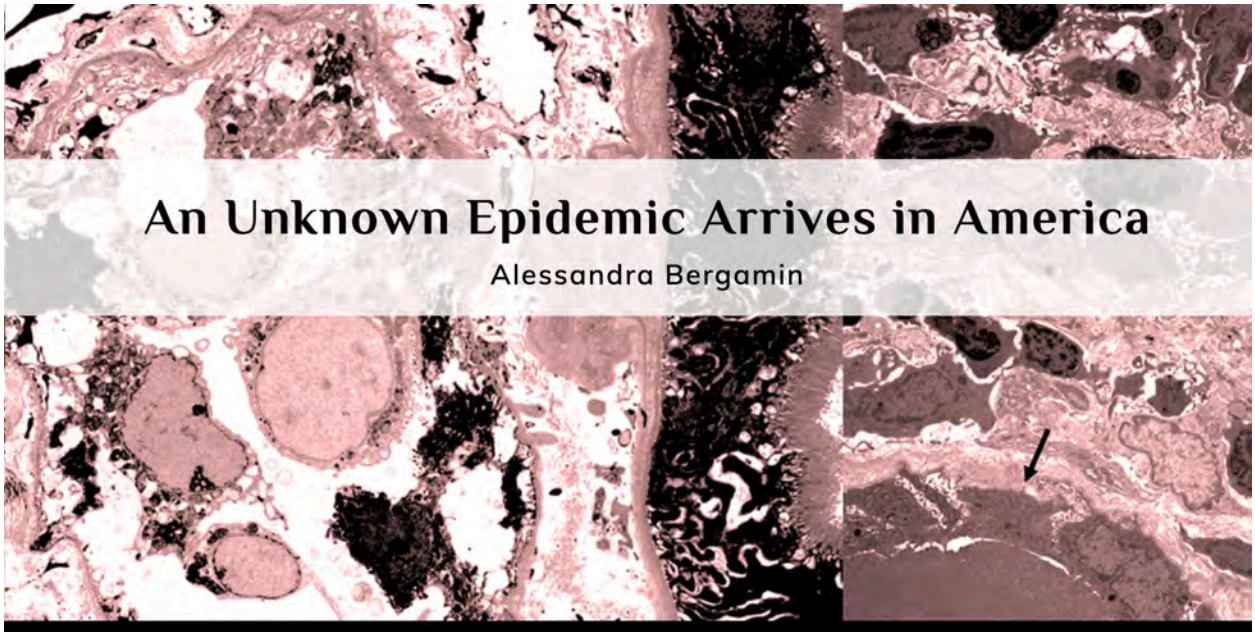
Two months ago, Gonzales had his left kidney removed. The shrunken organ had grown several cysts and doctors said there was an 85 percent chance those cysts would become cancerous. Gonzales now has one kidney, working at less than ten percent. During the weeks after the surgery, he could only walk from his bed to his car, just far enough to make it to dialysis. Now, he feels better, almost back to his version of normal. But the surgery, he knows, has made time more fleeting. With the help of his church — whose parishioners often slip him twenty dollar bills and collect anonymous donations—Gonzales has begun saving for his funeral. He cannot afford a funeral home so the service, he says, will take place at the church. Then, as is his wish, he will be laid to rest not in the place of his birth but in his adopted country.

“I’m preparing myself,” Gonzales says. “I know where I come from and where I’m going.”

He has not always been stoic, though. When he was first diagnosed with kidney failure, Gonzales attended the funeral of a fellow dialysis patient. It was a somber day. The two had sat through the same dialysis, at the same hospital, and now the man had died from the same disease that was sapping Gonzales’ strength, too. That night he couldn’t sleep. He suffered. He cried.

In Houston, at the end of the service, when the music has quieted and Gonzales has prayed in his muted reverie, the congregation gathers in a small kitchen behind the church. Crowded around a sweet and sticky sheet cake, the churchgoers sing a loud rendition of “Happy

Birthday.” Gonzales eats a sliver of cake and walks around the room, shaking the hands of neighbors and friends who call him Brother Reuben. Today, he is the cause for celebration. Just a few days earlier, it was his birthday. Gonzales is 46 years old.



anything to stop it from happening—at least so far."

When he was 18 years old, Jesus Gonzales was diagnosed with Mesoamerican nephropathy — a specific kind of kidney failure that has ravaged young, otherwise healthy men across Latin America. As a devout Evangelical, Gonzales spends every Sunday at Bethel Community Church on the outskirts of Houston.

normally. Without treatment, such as regular dialysis—unavailable to most MeN patients—life expectancy is short. Trabanino saw the men only once or twice in hospital before they chose to die at home. As research would eventually confirm, the disease in Latin America is confined to the Pacific coast, with hotspots stretching from Guatemala to Costa Rica. But it may also have a global reach. Since the late '90s, a similar disease, more generally known as chronic kidney disease of unknown origin, has appeared in Egypt, Sri Lanka and southern India. After some sixteen years of research, however, the cause, the cure and whether the two diseases are even related, remains unknown. Meanwhile, migration borne of violence, poverty and instability across the Americas has led to the disease appearing in a place far from the source—the United States.

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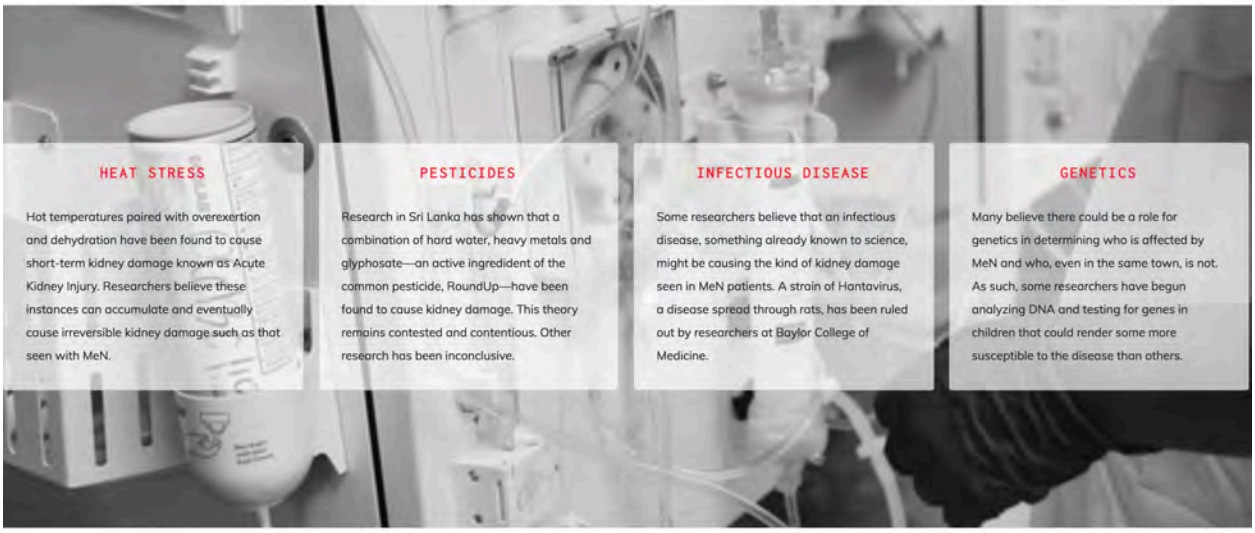
IN ULUAZAPA, EL SALVADOR–a town northeast of the city of San Miguel—Jesus Gonzales passed his youth in the verdant fields that surrounded his family's home. Gonzales' father was the



HEAT STRESS

Hot temperatures paired with overexertion and dehydration have been found to cause short-term kidney damage known as Acute Kidney Injury. Researchers believe these instances can accumulate and eventually cause irreversible kidney damage such as that seen with MeN.

PESTICIDES

Research in Sri Lanka has shown that a combination of hard water, heavy metals and glyphosate—an active ingredient of the common pesticide, RoundUp—have been found to cause kidney damage. This theory remains contested and contentious. Other research has been inconclusive.

INFECTIOUS DISEASE

Some researchers believe that an infectious disease, something already known to science, might be causing the kind of kidney damage seen in MeN patients. A strain of Hantavirus, a disease spread through rats, has been ruled out by researchers at Baylor College of Medicine.

GENETICS

Many believe there could be a role for genetics in determining who is affected by MeN and who, even in the same town, is not. As such, some researchers have begun analyzing DNA and testing for genes in children that could render some more susceptible to the disease than others.

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Thesis Source List

Sources Featured in the Story

Ramón García Trabanino
Nephrologist, San Salvador, El Salvador

Garabed Eknoyan
Nephrologist, Baylor College of Medicine

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Nephrologist, Baylor College of Medicine

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